ANNUAL ADMINISTRATIVE REPORT (FY 2005) AND WORK PLAN (FY 2006) FOR INVENTORIES AND VITAL SIGNS MONITORING

FY 2005-FY 2006

NORTHEAST TEMPERATE NETWORK

Includes: Acadia National Park, Appalachian National Scenic Trail, Boston Harbor Islands National Park Area, Marsh-Billings-Rockefeller National Historical Park, Minute Man National Historical Park, Morristown National Historical Park, Roosevelt-Vanderbilt National Historical Park, Saint Gaudens National Historic Site, Saratoga National Historical Park, Saugus Iron Works National Historic Site, Weir Farm National Historic Site

Northeast Temperate Network Approval Signatures

Rolf Diamant, Superintendent, Marsh-Billings-Rockefeller NHP Date

Network Board of Directors

Elizabeth Johnson, Regional Inventory and Monitoring Coordinator Date

Northeast Region

AARWP Checklist

	Budget program (MS Access, aarwp_budget.mdb)
X	The income amounts entered for Biological Inventories, Vital Signs Monitoring, Prototype $$ - Annual Transfer, Water Quality Monitoring and other sources matches the dollar amounts from the memos sent to the regions/networks by WASO (have you used the correct income amounts?).
X	In the Add/Edit Budget Records form, the amount shown for Total Expenses matches that for Total Income. (If it doesn't, enter a record under Expenses in the 7_Other category to make it balance; use an entry such as 'Unexpended funds' or 'Overspent Funds' in the Description column to explain the amount.)
X	For all Expense records, the Description field includes the name of the university, agency, company, or other vendor to help us document our outsourcing efforts. (If this expense involved a contract, cooperative agreement, interagency agreement, or other partnership, is it clear where the money went?)
X	For all Expense records, the correct item from the picklist for 'Where $$ Went' has been entered. [Think about who the check was written to; e.g., enter 'Other Non-Federal' for funding that went directly to the private sector, such as for purchases (computers, supplies, etc.), travel (airlines, rental cars, hotels).]
X	On the Status of Biological Inventories form, there is one record for each inventory that is described in the text section of the AARWP or in the budget program. Be sure to list each park that was involved in the particular inventory.
X	Each year's budget has been exported as an .rtf file (one for FY 2005 and one for FY 2006), and both files have been inserted into MS Word at the end of the AARWP document.
X	The file aarwp_budget.mdb has been renamed to include the 4-character network alpha code and the years, as shown in this example: NCCN_FY0506_aarwp.mdb
	Annual Report and Work Plan (MS Word)
X	I have carefully read the guidance for the AARWP and followed it.
X	A header or footer with the date that the aarwp was last revised has been included.
X	I gave special attention to the 'Summary of Major Accomplishments' and 'Public Interest Highlights' sections of the report, following this years' guidance and example. (We need good examples of the successes, applications, and highlights of the program to help us obtain funding for all 32 networks! Your 'Summary of Major Accomplishments' section at the beginning of your annual report is what we'll use for the I&M Program's annual Report to Congress to justify the funding spent by your network.)
X	In the 'Status of Park Vital Signs Monitoring' table, all entries are equal to or greater than the entries in last year's report.
	Photographs that might be included in one of the reports to Congress, brochures, websites, or other materials that help the program have been submitted by the network. (See the photo database and guidelines for submitting photographs.)
X	The aarwp file has been renamed using the network's 4-character alpha code and the years (FY0506) as in the example NCCN_ FY0506_aarwp.doc
X	The annual report has been approved by the appropriate individuals, per my region's procedures. (If you cannot get electronic signatures, it is okay to submit a hard copy with signatures after November 4.)
X	I have followed my region's procedures for submitting the two files (e.g., NCCN_ FY0506_aarwp.doc and NCCN_ FY0506_aarwp.mdb). (Most regions require you to submit the files through the regional office. The files may be zipped into a zip file if desired, and then submitted to Steven Fancy via either email or ftp).
	Review of FY 2006 Work Plan by WASO
YES	[Enter Yes or No]: Has the FY 2006 workplan been approved by the network Board of Directors, and therefore ready for the full WASO review? (If you enter No, the WASO I&M and WRD offices will only briefly review the work plan for 'red flags'.

Summary of Major Accomplishments and Public Interest Highlights

Northeast Temperate Network - This network of ten parks and, for planning purposes, the Appalachian Trail, includes Acadia NP, Boston Harbor Islands, Marsh-Billings-Rockefeller NHP, Minute Man NHP, Morristown NHP, Roosevelt-Vanderbilt NHP, Saint Gaudens NHP, Saratoga NHP, Saugus Iron Works NHS, and Weir Farm NHS. As part of its Vital Signs Monitoring efforts, the network includes active participation from the NCBN and all five APPA networks in 3 regions, ongoing park monitoring programs, the Appalachian Trail Conference, scientists with the USGS, and a number of universities in the northeast.

In FY 2005 the Network made substantial progress on all of the vital signs monitoring and completing inventory projects.

The network developed draft protocols for the highest priority vital signs and park resources and integrated these protocols into existing park monitoring programs whenever possible. We also published 10 inventory reports and 1 regional natural resource technical report in the NER Technical reporting series, distributed them to parks and regional science staff, and made them available on network and regional WebPages.

A. Objectives for Biological Inventories

1. Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.
2. Complete inventories to document 90% of vertebrates and vascular plants and conduct inventories targeted at taxonomic groups of special concern to Network parks.
3. Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program.

Summary of Major Network Accomplishments During FY 2005 - The Network integrated data from all of the inventory projects completed to date along with legacy data from each of the parks into NPSpecies. For two of the avian inventory projects, the Network worked with cooperators to certify all species observed by the cooperators during the execution of their avian inventory project. For the legacy data and other inventory projects, the Network reviewed reports and the content of the data itself to complete the certification checklist fields. In some instances, the Network relied on data contained in National databases to complete the certification checklist fields. For example, the Network relied on the USDA Plants database (2005) for values relating to plant species nativity. The Network developed a process where data for every park was evaluated, and nearly every park taxa group was certified using a combination of recently acquired inventory and legacy data. After reviewing data for the 13 individual parks that comprise the network, including the Appalachian Trail and the three independent parks that are jointly administered as the Roosevelt-Vanderbilt unit (ELRO, HOFR, VAMA) plus Martin Van Buren (MAVA) that is not currently part of the I&M program, the Network certified 94% (79 out of 84) of all taxa groups (taxa groups include fish, amphibians,

reptiles, birds, mammals, and vascular plants). Data for four of the remaining taxa groups (amphibians, reptiles, mammals at Boston Harbor Islands; amphibians at Weir Farm) are currently being collected. Fish at Boston Harbor Islands is the only taxa group that is not specifically targeted by an inventory project. This is because BOHA does not contain any freshwater resources that have fish, and because much of the water resources that surround the park are not within the park boundary.

At the conclusion of the certification process, all park NPSpecies data sets were uploaded to WASO to update the online version of NPSpecies. The NPSpecies data sets currently available on-line represent the most current species information available for each of the parks, except ACAD which is continuing to update and revise their data almost continuously.

In cooperation with NC State University, the network completed photo mosaics, including metadata for 7 network park vegetation maps. These GIS layers are presently being used for GMP planning purposes and in designing monitoring protocols.

The network mammal inventory completed field sampling to document 90% of mammal species in network parks. This project tested and used a new technique to identify hair samples to species, generated over 2000 photo vouchers, and collected over 100 voucher specimens.

The APPA mammal inventory (PA – CT) with East Stroudsburg University conducted initial field work by setting out flying squirrel nest boxes and sampled over 35 sites where high priority mammal species were expected to occur.

An agreement was initiated with Maine Natural Areas Program to conduct mammal inventories on the AT in Maine. This project will partner with the state agencies ecoregional inventory of the western Maine mountains and provide specific information about all mammal species found within the AT corridor.

The avian inventory final reports were published, all metadata generated and uploaded to the NPS Datastore (http://www1.nature.nps.gov/im/units/netn/reports/reports3.cfm). This inventory documented 178 avian species in network parks including 26 species that have shown negative population trends indicating that these historical parks may play an important role in the conservation of bird species. These data have already been used to generate park specific bird checklists and as a foundation for the development of the NETN Forest Bird Monitoring Protocol.

The herp inventories completed field sampling in network parks published two reports (http://www1.nature.nps.gov/im/units/netn/reports/reports3.cfm). The Acadia report documented 18 reptile and amphibian species and also documented the absence of two formerly common amphibian species at Acadia, northern leopard frog, and northern dusky salamander. The Morristown report documented 22 species which represents 68% of the species thought to historically occur at Morristown. This project was the first to document the occurrence of the Stinkpot within the park and indicates that Dusky Salamanders are declining.

Vegetation mapping efforts continued in network parks. Keys to NVC classifications in the Lower New England and North Atlantic Coast ecoregions were provided by NatureServe as well as park specific vegetation classification keys. Accuracy assessment

was completed for digital photo mosaics and these products are now available and being used by cooperators and park planners. A scoping meeting for developing a vegetation map for APPA was scheduled where all 14 state natural heritage programs, NatureServe, and NPPS will meet to review existing data, share ideas and determine the best strategy for vegetation mapping on the AT.

The Network developed a project with NatureServe to acquire Natural Heritage data from 10 of 14 states through which the Appalachian Trail passes. The project called for NatureServe to provide all data available within approximately 1000 meters on either side of the trail centerline. In addition to providing data, NatureServe agreed to review data exchange options and provide recommendations for ways to keep data held by the National Park Service and by individual state Heritage Programs up-to-date.

The landscape dynamics study under a cooperative agreement with the University of Rhode Island is assessing land cover change adjacent to parks from 1973-present. The URI team classified all necessary LandSat imagery and has met with all the parks to review the process and customize any analyses. The URI cooperators also contributed analyses of land-cover change on 10 segments of the AT to the "Vital Signs for the AT Report" to be published in FY2006.

B. Objectives for Vital Signs Monitoring

4. Summarize existing data and information.
5. Design and implement a Vital Signs monitoring plan for network parks.
6. Develop and implement a data management program.
7. Communicate information to parks, stakeholders, and the public

Summary of Major Network Accomplishments During FY 2005 - Following national program approval and peer review of the NETN Phase 2 report the network initiated the development of priority monitoring protocols. The first step in this process was to summarize existing park based monitoring programs to determine how best to integrate the vital signs program with ongoing park monitoring. Network cooperators (USGS) analyzed existing data for the Acadia Lakes Monitoring program to determine if the existing level of sampling would meet the park specific monitoring objectives. These analyses also provided a real example of how the network plans to report the vital signs program in a scorecard framework. SUNY-ESF reviewed existing forest monitoring plots and incorporated these into the sample design for the NETN Forest Monitoring Protocol.

Network staff took primary responsibility for drafting the Phase 3 report and worked with cooperators to develop specific monitoring protocols. SUNY-ESF is leading the Forest Monitoring Protocol and reviewed FIA/FHM (and other) protocols to integrate wherever possible specifics from the USDA Forest Service program into NETN. We conducted a cost / benefit analysis to prioritize measures after the vital signs were selected and developed thresholds of condition based on the forest ecology literature to integrate these measures into an ecological condition scorecard reporting framework. USGS is leading the development of the Fresh Water Monitoring Program (lakes, ponds and streams) and is integrating NETN into existing state and federal water quality monitoring programs. The Vermont Institute of Natural Science is leading the development of the Forest Breeding Bird monitoring Protocol that will be integrated into the existing VINS Forest

Bird Monitoring Program. This is a volunteer based program that will provide valuable opportunities for the public to participate and learn about park resources and the I&M program.

The network worked closely with the Appalachian Trail staff and the 5 AT networks to coordinate I&M activities related to the AT creating a 5 network and 3 region I&M working group. This forum provides the necessary coordination to implement vital signs on the AT, but also increases communication and collaboration on among the 5 networks in the 3 eastern regions. The workgroup is coordinating vegetation and forest monitoring across the 5 networks to share ideas, standardize objectives, definitions, and SOPs', and work to integrate protocols among parks and networks where possible.

The network hosted a meeting (October 2004) where the 5 I&M networks, APPA staff, and Monitoring Program Director reviewed existing network Phase 2 reports to select Vital Signs for the AT. Meeting attendees decided the next step for the AT Vital Signs Program was to summarize existing information related to the selected vital signs to determine if there was adequate information from ongoing programs. The network coordinator organized co-authors and drafted / edited the "AT Vital Signs Report" where summary information for 10 AT vital signs was presented. The report was reviewed by a broad audience of stakeholders and will be published in early FY2006.

The Northeast Temperate Network Data Manager worked with Data Managers from three Inventory and Monitoring Networks to organize a panel discussion at the national Inventory and Monitoring Program Biennial meeting. The topic was data integration, and the Northeast Temperate Network Data Manager provided insight into ways that tools and concepts used by the business community may be applied to the relationship between Networks and parks.

The network received board approval to detail a "Science Communication Specialist" for 1 yr to the network. This position has greatly increased the efficiency of the network by providing the necessary publication and communication skills to publish 10 technical reports, the AT Vital Signs Report, and 2 newsletters. Through a partnership with MABI, this position co-authored and was awarded a civic engagement grant to integrate the NETN vital signs monitoring program into local school science curricula. This project will pilot the idea of developing a lesson plan for middle- and high-school students to learn about forest ecology and implement a component of the forest monitoring program developed by NETN. A terrestrial salamander monitoring program will be piloted to determine if local schools can integrate the monitoring into their science programs. If successful, the program can be expanded to other network parks.

This position also assisted with other network publication needs (NCBN Monitoring Plan, newsletter, and brochure), regional documents, and developed I&M "road shows" that provide updates regarding the I&M program and will be presented to each park during winter 2006. The Science Communication Specialist co-facilitated the "Developing a Communication Framework" workgroup at the national I&M meeting where participants shared ideas about effective ways to communicate and disseminate the information from the I&M program into all park divisions.

The Network Data Manager developed an Invasive Plant Assessment utility to help parks prioritize their invasive plant problems. The utility combined two existing assessment protocols, both of which were funded in part by the National Park Service. The Inventory and Monitoring Program Invasive Plant Coordinator, Dr. Brad Welch reviewed the system and highlighted it in the March 2005 "invasive species update." The system has received interest from parks within the Network, other Federal agencies (U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers), and other NPS programs (Northeast Region Exotic Plant Management Team). The Network Data Manager submitted an abstract that was subsequently accepted to present the system at the 2005 Invasive Plant Summit in Framingham, Ma.

The network participated in the General Management Planning process for 2 parks (SAHI and ROVA) in FY2005 and summarized existing natural resource information, contributed to GMP scoping meetings, and integrated I&M information into park planning.

The Network Data Manager took the lead in coordinating the efforts of five Networks that were developing Data Management Plans. He organized a series of conference calls early in the year, and helped to design a new Data Management Plan outline. By fall, the Network had a draft Data Management Plan that comprehensively identifies the key data management concerns confronting the Network, along with a series of more than 30 Standard Operating Procedure manuals that will give the Network guidance on ways to address these issues.

C. Objective for Water Quality Monitoring

8. Develop water quality monitoring in the Network parks

Summary of Major Network Accomplishments During FY 2005 The network continued an interagency agreement with USGS to assist in the development of water quality monitoring for network parks. The agreement follows the Phase reporting established by the I&M program. During FY2005, USGS worked closely with network staff and other cooperators to develop the Fresh Water Monitoring Protocol that integrates existing programs.

Public Interest Highlights

The network designed and published a Northeast Temperate Network Newsletter updating parks on the public regarding the status of NETN and vital signs selection.

The network, continued the partnership with UMASS to refine and enhance the NETN webpage (http://www1.nature.nps.gov/im/units/netn/index.cfm).

Of significant note is the web based platform developed by North Carolina State University to display National Park Service I&M natural resource information. This easy to navigate web system allows resource managers and the general public to display and interrogate field plot information via a standard web browser. The same program enables the field scientists to inspect, edit, and augment their field data without the intervening use of field sheets or data transcriptions. The program generates both standard field reports and interpreted maps. This effort is the essence of a new Master's thesis and is currently being prepared for journal publication.

A complete set of digital air photo mosaics is now available for most Northeast Region I&M parks. These mosaics are being migrated to a publicly available server (i.e., ArcSDE based environment) and made available for download or for easy access via a GIS. This means that resource managers, scientists, and any interested party will have a direct connection to the most recent imagery for these parks.

NCState researchers here have developed and published a protocol for constructing wildfire fuel load maps based on the I&M generated digital vegetation maps and the corresponding digital photo mosaics. This protocol allows the rapid development of fuel load models for both spring and fall fire conditions and the consequent deployment of these models into the on-going National Park Service wildfire planning effort. This methodology has particular impact on the development of plans to minimize wildfire risk to lives and property of persons living within or near Northeastern National Parks.

The Appalachian Trail mammal inventory (East Stroudsburg University) documented Southern Bog Lemming in a new area for northern New Jersey, possibly a new record and a range expansion for this rare species. Also, Northern Water shrews were detected in Connecticut, adding a new location for this species in the state.

Overview and Objectives

Ecological context

The Northeast Temperate (NETN) contains 11 parks, including a section of the Appalachian NST. These parks contain diverse cultural and natural resources within eight states (ME, NH, VT, MA, CT, NY, NJ, and PA) and span two ecological divisions (Laurentian / Acadian and Central Interior & Appalachian). Parks within the Network range geographically from Acadia NP in coastal Maine to Morristown NHP in central New Jersey.

NETN parks range in size from ≈ 9 acres at Saugus Iron Works to ≈ 85,000 acres covered by the Appalachian Trail (NPS lands from ME-MD), include the beginning and end of the Revolutionary War (Minute Man NHP and Saratoga NHP respectively), and a strategic military location for General George Washington (Morristown NHP). Two National Historic Parks commemorate the lives of artists (Saint-Gaudens NHS and Weir Farm NHS) and Roosevelt-Vanderbilt NHS celebrates the lives of the "Gilded Age". Marsh-Billings-Rockefeller NHP and Boston Harbor Islands NPA are both new to the NPS and unique in their establishment and mandates. Marsh-Billings-Rockefeller NHP is the only national park to focus on conservation history and the evolving nature of land stewardship. Boston Harbor Islands, established in 1996, are a culturally and naturally diverse set of 34 drowned drumlins in the Massachusetts Bay managed by a 13-member

partnership. Saugus Iron Works NHS marks the site of the first integrated iron works in North America, which gave rise to the industrial revolution and is known as the forerunner of America's industrial giants. Acadia is the only National Park in the NETN and hosts a diverse array of cultural, natural, and geologic resources. The Appalachian Trail, crosses some of the most diverse ecological communities in the Northeast, is managed by a unique partnership with the NPS and the Appalachian Trail Conference, and provides an exciting opportunity for ecological monitoring across 2,100 miles of habitat representative of the entire east coast of the US. Eight of the eleven NETN parks are National Historic Parks or Sites, and thus have a primary mandate to maintain historical features, landscapes or practices. This special mandate has a substantial impact on ecological resources within these parks, as they are often managed to maintain early successional habitats, or incorporate agriculture or forestry within the parks to satisfy this mandate.

Program overview

The Northeast Temperate (NETN) contains 10 parks and coordinates the I&M activities for the Appalachian NST. The NETN biological inventories have been conducted including avian, reptile and amphibians, mammals, fish, landscape dynamics, and targeted invasive plant inventories. These projects completed field work in FY2005 and will provide the necessary sampling to document 90% of vertebrate species in NETN parks. To conduct these inventories, cooperative agreements were established with the Wildlife Conservation Society, the USGS, the University of Rhode Island, the Vermont Institute of Natural Science, the University of Maine, East Stroudsburg University, and the University of Massachusetts. As part of the inventory program, compilation and cataloging of existing data into the three national I&M databases, NPSpecies, NatureBib and the Dataset Catalog, continues, and newly acquired I&M data and information are starting to be used in park planning processes.

Significant progress continues with vegetation mapping in Network parks. ACAD is complete and several other parks, MORR, SARA, ROVA and WEFA have draft vegetation maps. All of the parks have digital orthophotos and mosaics (except ACAD and SAIR) for mapping. NatureServe will complete mapping and classification for three New England parks, MABI, MIMA and SAGA. BOHA and SAIR both have significant existing floristic and community data that will be used to develop vegetation mapping program products. NatureServe will put these products together in proper formats. The Network is also cooperating with NatureServe to determine the feasibility of vegetation mapping at APPA. North Carolina State University is handling the GIS component for the network parks and providing the necessary positional accuracy assessments for all vegetation mapping aerial photography. Other cooperators (NY Natural Heritage Program, CT Department of Environmental Protection) are completing mapping and classification for SARA, ROVA, and WEFA.

The NETN Vital Signs Monitoring Program is working with cooperators from the State University of New York and USGS as the core science team to develop the network monitoring plan and monitoring protocols. Network staff took the lead on drafting the Phase 3 report while cooperators developed forest, freshwater, and breeding bird monitoring protocols. The network is also working with cooperators to develop a scorecard of ecological integrity based on thresholds of resource condition. Thresholds

will be used to report the condition of specific park resources, where possible, and will be refined over time as more information is gathered related to a better understanding of natural variability in specific metrics. The monitoring plan and 3 protocols will be submitted to the national program on or before the 15 December 2005 deadline.

A. Objectives for Biological Inventories

1. Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.
2. Complete inventories to document 90% of vertebrates and vascular plants and conduct inventories targeted at taxonomic groups of special concern to Network parks.
3. Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program.

B. Objectives for Vital Signs Monitoring

4. Summarize existing data and information.
5. Design and implement a Vital Signs monitoring plan for network parks.
6. Develop and implement a data management plan including development of a network webpage.
7. Communicate program information and inventory and monitoring results to parks, stakeholders, and the public.

C. Objective for Water Quality Monitoring

8. Develop water quality monitoring in the network parks.

II. Accomplishments and Scheduled Activities

A. Biological Inventories

Objective 1 – *Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.*

Task 1.1 – NPSpecies Database

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments**: (1) Integrated data for all parks from existing legacy data sets and recent project; (2) performed thorough QA/QC review; (3) Certified 79 out 84 (94%) of all park taxa groups; (4) Thoroughly documented status of NPSpecies data for each park; (5) Replaced existing On-line NPSpecies data with updated and revised record-sets.
- **Scheduled FY 2006 Activities and Products:** (1) Continue to acquire and evaluate inventory data and add these data to NPSpecies; (2) revise vertebrate and vascular plant records in accordance with I&M certification protocols.

Task 1.2 – Integrate completed vegetation mapping data into NPSpecies

Parks involved: ACAD

- **FY2005 Accomplishments*:*** (1) Extracted vegetation mapping data from PLOTS and imported records into NPSpecies; (2) Revised NPSpecies dataset provided to ACAD for review and integration into their most current working version; (3) Forwarded revised NPSpecies record to ACAD data manager for their review and integration into their most current NPSpecies record set.
- **Scheduled FY 2006 Activities and Products:** Obtain most recent ACAD NPSpecies data file from ACAD data manager and replace existing on-line version.

Task 1.3 –NatureBIB Database

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments:** (1) received and fulfilled NatureBib data requests from park personnel; (2) assessed the overall status of parks' NatureBib databases and has begun detailed editing of park databases; (3) Park NatureBib database records are being assessed and edited for duplication, spelling, authority control, data integrity and data comprehensiveness. To date, 20 records and 5 NETN park databases have been or are near completion; (4) Completed a draft Northeast Region NatureBib Data Management Plan and a draft Northeast Region NatureBib Data Entry Manual; (5) scanning and digitizing select NatureBib documents for NETN parks. Digital versions of NatureBib documents are also being collected from a variety of online sources. To date, 2 documents have been scanned and converted to pdf formt (final pdf documents: ACAD – 1 and BOHA – 1).
- **Scheduled FY 2006 Activities and Products:** (1) NatureBib database data requests will continue to be fulfilled as they are received; (2) Quarterly e-mail progress reports will be sent to detail task progress; (3) NatureBib database assessment and editing will continue for ACAD, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA NatureBib databases, (4) A NatureBib Data Management Plan for the Eastern Rivers and Mountains Network will be completed; (5) Scanning and digitizing of NETN NatureBib documents will continue; (6) Quarterly e-mail progress reports will be sent to detail task progress.

Task 1.4 Create Digital Photo Mosaics, Assess Positional Accuracy, Create Metadata, Format and Distribute Data

***Parks Involved*:** ROVA, SARA, WEFA, MABI, MIMA, SAGA, BOHA

- **FY 2005 Accomplishments**: (1) Created digital orthophoto mosaics for MIMA and BOHA; (2) Assessed positional accuracy of the ROVA, WEFA, MIMA, and BOHA mosaics; (3) Created metadata for the ROVA, WEFA, and MIMA mosaics; (4) Distributed preliminary copies of completed mosaics, as requested; and (5) Completed the final report for the WEFA mosaic.

- **Scheduled FY 2006 Activities and Products:** Initial positional accuracy assessment results for the BOHA mosaic were disappointing, but not unexpected; we had anticipated relatively poor accuracy because of problems with the original aerial photography. In an effort to improve the accuracy of this mosaic we will re-rectify the image using a second order polynomial and then reassess the positional accuracy. When that procedure has been completed, we will complete metadata for the BOHA mosaic. We will prepare and submit individual final reports for the ROVA, SARA, MABI, MIMA, SAGA, and BOHA mosaics. Mosaics and associated data files for ROVA, SARA, WEFA, MABI, SAGA, and BOHA were posted to an ArcSDE server accessible to NPS personnel.

Task 1.5 Natural Resource Inventory Database and Spatial Data Review

***Parks Involved*:** NER network parks

- **FY 2005 Accomplishments:** NCSU reviewed the spatial and tabular data accuracy, and developed metadata records for (1) the Amphibian and Reptile Inventory at ACAD; (2) the biological inventories for MAVA; (3) the inventory of macrolepidoptera and other insects at BOHA; and, (4) the bird inventory for BOHA, ROVA, MIMA, MORR, SAIR, SARA, WEFA (P.I.: Peter Paton).
- **FY 2006 Scheduled activities and products:** Cooperators at NC State will continue to review the Bird Inventory and amphibian/reptile inventory (P.I.: Steve Facio) – MABI, SAGA. Additional inventory studies will be reviewed throughout FY 2006 as NER Network Data Managers provide data to NCState.

Objective 2 – *Complete inventories to document 90% of vertebrates and vascular plants and conduct inventories targeted at taxonomic groups of special concern to Network parks.*

Task 2.1 – Mammal inventories (USGS, A. O'Connell)

Parks Involved: ACAD, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, WEFA

- **FY 2005 Accomplishments:** Mammal sampling at the NETN parks was completed in November 2004. All mammal evidence collected from sampling equipment (remote photographs, track samples, mammal hair samples) was identified to species. Photographic evidence and track samples were identified by visual inspection and measurements, whereas hair samples were analyzed using a Matrix Assisted Laser Desorption/Ionization Time-of Flight Mass Spectrometer (MALDI-TOF) at the University of Rhode Island. Vegetation data was collected at all of the mammal sampling sites, organized in an Access database, and summarized for each sampling location. We finalized GIS land-use coverages for each of the NETN parks using digital aerial photographs and the National Land-cover/Land-use Dataset (NLCD). We calculated the percentages of different land-use and amount of habitat fragmentation at multiple spatial scales for each park. We used the information on land-use, habitat fragmentation, and local vegetative conditions to model site occupancy and detection probabilities for 10 medium-sized mammal species. A rough draft of the student's M.S. Thesis, detailing all project findings, has been prepared and is currently under review.

- **FY 2006 Scheduled activities and products**: (1) process specimens for collections; (2) deliver report and project data for final review; (3) reformat report to meet Northeast Region Technical Reporting series format and publish; (4) submit spatial and tabular data to NCSU for review, evaluation, and metadata generation; (5) and, following NCSU review integrate data into NPSpecies. The student's M.S. Thesis will be completed and defended by December 2005. The thesis has been written in manuscript form to allow two manuscripts to be submitted for publication in peer reviewed scientific journals. It is expected that this work will be complete in December 2005 or January 2006. The park will receive a copy of the M.S. Thesis that will include supplemental appendices detailing conditions at each of the parks. In addition, the NPS will receive an Access database with all landscape and vegetation calculations and GIS coverages for each park.

Task 2.2 – Avian inventories (URI, P. Paton)

***Parks Involved*:** ROVA, SAIR, WEFA, BOHA, MORR, MIMA, SARA

- **FY 2005 Accomplishments:** Final report published as technical report;

  Trocki, C., P. Paton. December 2003. Avian Surveys in Northeast Temperate Network. Technical Report NPS/NER/NRTR—2005/004. National Park Service. Woodstock, VT.

  All data reviewed by NCSU, metadata generated, entered into NPSpecies, and uploaded to NPS Datastore. Data from this report being used for to generate park specific bird check-lists and as a foundation for the avian monitoring protocol.

- **FY 2006 Scheduled activities and products:** Project complete.

Task 2.3 – Avian inventories (VINS, S. Faccio)

Parks Involved: MABI, SAGA

- **FY 2005 Accomplishments:** Final reports published as technical reports;

  Faccio, S. D. September 2003. A Biological Inventory of Breeding Birds at the Marsh-Billings-Rockefeller National Historical Park and Adjacent Lands, Woodstock, VT. Technical Report NPS/NER/NRTR--2005/005. National Park Service. Woodstock, VT.

  Faccio, S. D. September 2003. A Biological Inventory of Breeding Birds at the Saint-Gaudens National Historic Site Cornish, New Hampshire. Technical Report NPS/NER/NRTR—2005/006. National Park Service. Woodstock, VT.

  All data reviewed and QA/QC and entered into NPSpecies. Data from this report being used for to generate park specific bird check-lists and as a foundation for the avian monitoring protocol.

- **FY 2006 Scheduled activities and products:** Project complete.

Task 2.4 – Marsh Bird inventories (USGS, J. Longcore)

Parks Involved: ACAD

- **FY 2005 Accomplishments:** (1) Final report submitted to ACAD; (2) Network reviewed and commented on report**.**
- **FY 2006 Scheduled activities and products**: (1) Obtain revised report; (2) reformat report to meet Northeast Region Technical Reporting series format and publish; (3) submit spatial and tabular data to NCSU for review, evaluation, and metadata generation; (4) and, following NCSU review integrate data into NPSpecies.

Task 2.5 – Inventory of reptiles and amphibians (WCS, J. Behler)

***Parks Involved*:** ACAD, MIMA, MORR, SAGA, SAIR, SARA, WEFA

- **FY 2005 Accomplishments:** (1) Final reports, maps, and databases for work conducted at ACAD and MORR were completed, published, and distributed; (2) NCSU reviewed and evaluated spatial and tabular data, and generated metadata for ACAD and MORR herp inventory; (3) data entered into NPSpecies and uploaded to NPS Datastore.

  Brotherton, D. K., J. L. Behler, and R. P. Cook. May 2004. Acadia National Park Amphibian and Reptile Inventory March-September 2001. Technical Report NPS/NER/NRTR—2005/007. National Park Service. Woodstock, VT.

  Brotherton, D. K., J. L. Behler, L. Williamson, and R. P. Cook. March 2005. Morristown National Historical Park Amphibian and Reptile Inventory March-September 2000. Technical Report NPS/NER/NRTR—2005/013. National Park Service. Woodstock, VT.

- **FY 2006 Scheduled Activities and Products:** (1) Draft reports will be revised and final reports will be submitted for WEFA, SAGA, SAIR, SARA, and MIMA; (2) reformat reports to meet Northeast Region Technical Reporting series format and publish; (3) submit spatial and tabular data to NCSU for review, evaluation, and metadata generation; (4) and, following NCSU review integrate data into NPSpecies.

Task 2.6 – Inventory of inter-tidal fishes (UMaine, L. Kling)

***Parks involved*:** ACAD

- **FY 2005 Accomplishments:** Fish were inventoried during two field seasons, 2001 and 2002 at Acadia. The objective was to sample as many diverse habitats as possible in the inter-tidal and estuarine zones to maximize the resultant species lists. The fieldwork component of the project has been completed. A draft final report was submitted on September 30, 2005.
- **FY 2006 Scheduled Activities and Products**: (1) Remain in close contact with cooperator; (2) obtain draft report and data; (3) review and comment on draft report; (4) submit spatial and tabular data to NCSU for review, evaluation, and metadata generation; (5) following NCSU review, integrate data into NPSpecies; (6) approve and publish final report and submit data products to all appropriate NPS databases.

Task 2.7 – Inventory of freshwater fish (UMASS, M. Mather)

***Parks involved*:** MABI, MIMA, MORR, SAGA, SAIR, SARA, ROVA, WEFA

- **FY 2005 Accomplishments**: published UMASS fish inventory report And incorporated data into NPSpecies.

  Mather, M. E., A.J. Norris, M.P. Carey. March 2003. Freshwater Fish Inventory: Northeast Temperate Network, 1999-2001. Technical Report NPS/NER/NRTR—2005/16. National Park Service. Woodstock, VT.

- **FY 2006 Scheduled Activities and Products**: Project completed.

Task 2.7 – Identify existing information and priority inventory needs for APPA.

Parks Involved: APPA

- **FY 2005 Accomplishments:** (1) Initiated cooperative agreement with Dr. Howard Whidden (East Stroudsburg University, PA) to conduct a mammal inventory on the AT from the PA/MD border north to the CT/MA border (> 400 Trail miles); (2) Used GIS to identify potential study sites for mammals along the Appalachian Trail in PA, NJ, NY, and CT, and also in DEWA.; (3) Sites were field checked and appropriate sites were sampled for all mammal species, targeting rare species; (4) Completed small mammal trapping at 28 study sites. Captured 12 different species, including 2 target species (water shrew and southern bog lemming); (5) Installed additional nestboxes for Northern Flying Squirrels in DEWA and along AT corridor for a final total of 10 boxes at each of 14 sites; (6) Began checking flying squirrel nest boxes; (7) Began compiling data and planning final report; (8) initiated cooperative agreement with Maine Natural Heritage Program to inventory mammals on the AT in Maine – site selection and field work will begin in FY2006; (9) established cooperative agreement with NatureServe to download 10 of 14 state natural heritage program data within 1 mile of either side of the AT footpath and identify potential methods for efficient data exchange between APPA and natural heritage programs; (10) data for each of 10 states was delivered to NETN for review.

- **FY 2006 Scheduled Activities and Products:** (1) Complete PA-MA mammal inventory field work during winter 2006; (2) obtain draft report and data; (3) review and comment on draft report; (4) submit spatial and tabular data to NCSU for review, evaluation, and metadata generation; (5) following NCSU review, integrate data into NPSpecies; (6) approve and publish final report and submit data products to all appropriate NPS databases; (7) initiate ME mammal inventory field work; (8) complete heritage program data review and review options for data exchange.

Objective 3 *– Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program.*

Task 3.1 – Vegetation Mapping (NY Natural Heritage)

Parks Involved: (SARA, ROVA)

- **FY 2005 Accomplishments**: NY Natural Heritage continuing to finalize vegetation maps for SARA and ROVA. These park projects were delayed because UPDE fieldwork was initiated by the same cooperator.
- **FY 2006 Scheduled Activities and Products**: NY Natural Heritage will complete statistical vegetation analyses, finalizing vegetation maps, and conducting accuracy assessment sampling of SARA and ROVA.

Task 3.2 – Vegetation Mapping: Vegetation Crosswalk work with CTDEP, NYNHP

Parks Involved: (WEFA, SARA, ROVA)

- **FY 2005 Accomplishments:** (1) NatureServe ecologists reviewed the suggested NVC crosswalk for WEFA provided by CTDEP; a draft report for WEFA was submitted, (2) NatureServe ecologists received data analysis from NYNHP for SARA and ROVA; (3) NVC crosswalk for ROVA is 50% complete.
- **FY 2006 Scheduled activities and products**: NVC crosswalks for all three parks scheduled for completion and submission to partners; WEFA in October, and ROVA and SARA by April 2006. NatureServe ecology will work with CTDEP to ensure that all products meet NPS standards.

Task 3.3 -- Conduct a vegetation mapping feasibility study (NatureServe L. Sneddon)

Parks Involved: APPA, BOHA, SAIR

- **FY 2005 Accomplishments:** (1) NatureServe ecologist reviewed Ted Elliman's work on the CT portion of the AT, and met with him to instruct him in the use of the PLOTS database; (2) also met with Ted to plan plot work in conjunction with plant inventory on the MA portion of the trail, using air photos of the whole length; (3) NatureServe was awarded NPS funding to plan for and conduct a scoping meeting for the AT, to be held the first week of May 2006 at the NCTC in Shepherdstown, WV; (4) acquired some of the existing plot data from state heritage programs.
- **FY 2006 Scheduled activities and products:** (1) MA, CT: work with CT heritage and Ted Elliman to determine what, if any additional plot work is needed for CT and MA; (2) APPA: Goals for the scoping meeting are to determine what additional plot data exists and is usable; which heritage programs want to be involved in data collection and mapping; identify subcontractors to fill in the data collection gaps; and identify an efficient means of mapping this exceedingly long narrow park crossing 14 states; (3) invited NS chief ecologist Pat Comer to attend to share his experiences using low-level flights, digital photos and stereo videography in mapping in Alaska.

Task 3.4 -- Complete vegetation classification, mapping, and metadata and assemble all products into set of deliverables that meet the national mapping standards (NatureServe L. Sneddon)

Parks Involved: MIMA, MABI, SAGA, MORR

- **FY 2005 Accomplishments:** NS has made much progress on vegetation mapping these parks. (1) MORR: All field data, draft report, and photos have been

received from contractor Robert Zaremba; (2) NVC types were finalized and classification key generated; (3) NatureServe subcontracted two ecologists (Stephanie Perles and Greg Podniesinski) who completed the digitizing, developed an accuracy assessment plan, and conducted the accuracy assessment field work; (4) MIMA, MABI, SAGA: received all field data, classification reports, and map products from contractors Vermont Natural Heritage Program (MABI), New Hampshire Natural Heritage Bureau (SAGA), Robert Zaremba and James W. Sewall Co. (MIMA).

- **FY 2006 Scheduled Activities and Products**: MORR: will acquire all products from subcontractors, complete the final reports, and assemble all veg mapping products. MIMA, MABI, SAGA: will finalize all products and submit draft final reports for each park. NS was awarded a grant to perform accuracy assessments for each park, and plans are in progress to conduct the field work summer 2006.

Task 3.5 -- Land-cover classification and change assessment (URI, Y.Q. Wang).

Parks Involved: ACAD, APPA, MABI, MIMA, MORR, ROVA, SAGA, SARA, and WEFA.

- **FY 2005 Accomplishments:** (1) completed classification for all parks and 10 AT segments for each time period using LandSat data; (2) wrote Landscape Dynamics chapter of the Appalachian Trail Vital Signs Report based on data summaries from this project; (3) met with park resource managers to explain data products and their limitations and utilities; (4) developed image classification technique used at ACAD; (5) initiated accuracy assessment of land-cover data; (6) generated digital photo library of all study sites.
- **FY 2006 Scheduled Activities and Products:** (1) Complete accuracy assessment of land-cover data, then issue data to NPS for their review and feedback; (2) Create automated method for production of land-cover change statistics; (3) Package statistics, final land-cover data, VFRDB, source Landsat data, ancillary GIS data for distribution; (4) submit summary reports to accompany these data which will, at minimum, describe methodology, land-cover change at all study sites, land-cover change relationships to existing conservation lands, and recommendations for further monitoring; (5) Generate publications for a refereed journal and conference proceedings; (6) Present project results at professional conferences.

B. Vital Signs Monitoring

Objective 4 *– Summarize existing data and information.*

Task 4.1 – Integration of Existing Park Monitoring Programs

- **FY 2005 Accomplishments**: (1) As part of protocol development, cooperators reviewed existing park monitoring programs for integration into NETN; (2) USGS conducted an analyses of 10 years of Acadia lake monitoring data and integrated the results into an example scorecard report; (3) The lake monitoring review was critical to the integration of the existing Acadia Lakes Monitoring Program with Vital Signs; (4) SUNY-ESF integrated existing forest monitoring data from MABI, SAGA, and MORR into the selection of permanent forest

monitoring plots for the Vital Signs Program; (5) VINS integrated the avian inventory data into the development of the landbird monitoring protocols.

- **FY 2006 Scheduled Activities and Products**: (1) The network staff and cooperators will conduct a more complete analysis of the Acadia Lakes monitoring program to determine if the sampling effort is appropriate given the stated objectives; (2) Existing park based forest monitoring data will be acquired and analyzed to better determine sampling intensity necessary to detect changes in key metrics over time; (3) The network will work with an existing inter-tidal and wetland inventory and monitoring program at Acadia to integrate these projects into Vital Signs and expand them to other network parks.

Objective 5 *– Design and implement a Vital Signs monitoring plan for network parks.*

Task 5.1 – Draft Phase 3 report

- **FY 2005 Accomplishments:** (1) Network staff revised chapters 1-3 of the Phase 2 report by; incorporating conceptual diagrams, updating the overall network objectives, revising the vital signs table, reducing the length of each chapter, and laying out the chapters for publication; (2) network staff have drafted the remaining 8 chapters, including generating an example scorecard reporting framework for chapter 7.
- **FY 2006 Scheduled Activities and Products:** Complete the Phase 3 Report for the 15 December 2005 deadline, and revise and submit the final report by the 30 September 2006 deadline.

Task 5.2 – Draft Forest Monitoring Protocol

- **FY 2005 Accomplishments:** (1) Continued an agreement with SUNY-ESF to begin developing the Forest Monitoring Protocol; (2) reviewed other agency forest monitoring protocols (FIA/FHM) and integrated as much of these existing protocols as possible into NETN; (3) conducted cost/benefit analysis to prioritize measures that will be included in the protocol; (4) developed sampling frame, defined sample units, and scales of inference; (5) drafted all SOP's and the protocol narrative; (6) developed novel, tiered approach to forest monitoring to provide broad spatial and temporal coverage within the NETN budget.
- **FY 2006 Scheduled Activities and Products:** (1) Complete the draft Forest Monitoring Protocol (15 November 2005) and have it reviewed; (2) pilot the implementation of the protocol during the field season, including developing field crew training materials and training a crew, (3) use pilot data to finalize sample size, costs, and submit final protocol 15 September 2006.

Task 5.3 – Draft Breeding Bird Monitoring Protocol

- **FY 2005 Accomplishments**: (1) Established agreement with Vermont Institute of Natural Science to develop NETN Forest Bird Monitoring Program; (2) VINS will integrate NPS bird monitoring into existing Forest Bird Monitoring Program where volunteers are used to conduct breeding bird sampling; (3) protocol

narrative and SOP's drafted; (4) VINS PI worked closely with SUNY to co-locate where possible the Bird and Forest monitoring plots.

- **FY 2006 Scheduled Activities and Products**: (1) Complete the draft Forest Bird Monitoring Protocol (15 November 2005) and have it reviewed; (2) pilot the implementation of the protocol during the field season, including working with parks to identify volunteers, (3) train volunteers and provide them with all necessary materials to implement protocol; (4) submit final protocol 15 September 2006.

Task 5.4 –Vital Signs for the Appalachian Trail

- **FY 2005 Accomplishments**: (1) Hosted a meeting (October 2004) at NCTC where the 5 I&M networks, APPA staff, and Monitoring Program Director reviewed existing network Phase 2 reports to select Vital Signs for the AT; (2) Attendees decided the next step for the AT Vital Signs Program was to summarize existing information related to the selected vital signs to determine if there was adequate information from ongoing programs; (3) organized co-authors and drafted / edited the "AT Vital Signs Report" where summary information for 10 AT vital signs was presented; (4) circulated the report for review and incorporated comments into the final draft; (5) participated in the ATPO sponsored AT – Forest Health Monitoring Program by providing guidance related to the NPS I&M process necessary to conduct any new monitoring.
- **FY 2006 Scheduled Activities and Products**: (1) Publish and distribute the "AT Vital Signs Report"; (2) work with park staff and the ATC to hold an AT vital signs monitoring conference in July 2006; (3) work with cooperators to develop sampling designs for vital signs that can not be adequately summarized using existing information.

Objective 6 *– Develop and implement a data management program.*

Task 6.1– Acquire all readily available park related GIS datasets.

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments:** (1) Acquire plant distribution data for the eastern region of the United States; (2) Maintained all previously acquired spatial data for the network parks.
- **FY 2006 Scheduled Activities and Products:** (1) Continue to acquire data as needed; (2) Maintain existing data; (3) Develop metadata where necessary; (4) post data to NR-GIS datastore where permissible.

Task 6.2 – Communication, data distribution, and network webpage.

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments:** (1) Continued to work with cooperators at UMASS to design a network webpage, including a database driven "dynamic" component that announces network news (*http://www1.nature.nps.gov/im/units/netn/*); (2)

finalized NETN "administration" website to allow NETN administrators to add news items and delete old items without having to write HTML code; (3) maintained and supported production website; (4) finished development of a web based task management system to help NETN staff coordinate projects underway by various cooperators.

- **Scheduled FY 2006 Activities and Products**: The UMASS webpage developers will (1) document their association with NETN; (2) design and develop new updated "reports" pages as needed; (3) develop a replacement "data" page and consider how it relates or works with the new NPS data server (*http://science.nature.nps.gov/nrgis/*); (4) other web-development or maintenance tasks as instructed by NETN office.

Task 6.3 – Federal Geographic Data Committee (FGDC) Metadata

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments:** Implemented efforts to require FGDC compliant metadata for all future projects funded by the NETN
- **FY 2006 Scheduled Activities and Products:** Continue to work with NCState to: (1) evaluate project materials; (2) produce comprehensive project metadata; (3) prepare project materials for permanent archival storage.

Task 6.4 – Information management including QA/QC

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments:** (1) Wrote and/or modified more than 30 Standard Operating Procedure documents intended to guide the Network's data management program; (2) Installed a computer security system that replicates Network data and information; (3) Redesigned existing computer back-up system; (4) Wrote a Network Scope of Collection Statement intended to identify information, specimens, and other items of interest to the Network that are to be collected and permanently stored; (5) Integrated a QA/QC module into the Network project tracking database to document the QA/QC process that each project has completed.
- **FY 2006 Scheduled Activities and Products:** (1) Based on prior experience, controls shall be established to ensure that all network derived data is of a known and acceptable quality. The Network QA/QC requirements shall address, where applicable: protocols and standards; standard operating procedures; data verification, validation, and editing; data documentation & metadata standards; and, data summaries and analyses; (2) Implement Network archival program to permanently archive network documentation, reports, specimens in accordance with the Network Scope of Collection Statement; (3) Install additional computer security systems and improved back-up technologies; (4) Utilize adaptive management to improve existing data management Standard Operating Procedures.

Task 6.5 – Data management planning and database development

Parks Involved: ACAD, APPA, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, and WEFA.

- **FY 2005 Accomplishments:** (1) Data Manager led a multi-network data management planning group; (2) wrote a comprehensive data management plan; (3) developed a project management and documentation database that enables staff to quickly determine project status; (4) improved the Network Budget Tracking database that permits the Network to quickly and accurately reconcile expenses against AFS; (5) Built a system to inventory and report Network equipment, including computer hardware, water sampling equipment, and GPS receivers; (6) Developed a database to inventory and track computer software.
- **FY 2006 Scheduled Activities and Products:** (1) Finalize NETN Data Management Plan; (2) work with cooperators, parks, and Network staff to improve data quality and to implement data management strategies outlined in existing Data Management Plan; (3) pursue regional cooperation for data management with other NER I&M networks and parks; this could include shared databases, data management guidelines, and SOPs.

Objective 7 – *Communicate program information and inventory and monitoring results to parks, stakeholders, and the public.*

Task 7.1 – Edit, format, and publish reports in the Northeast Region Technical Report Series

***Parks Involved*:** All NETN parks.

- **FY 2005 Accomplishments:** Published 10 technical reports in the NER Technical Report Series, and developed formatting guidelines for cooperators in order to streamline the report production process. Cooperated with NCBN to format and publish their monitoring plan.
- **FY 2006 Scheduled Activities and Products:** (1) Continue publishing technical reports as project reports are finalized, (2) edit, format, and publish the Phase 3 and final Vital Signs Monitoring Plan.

Task 7.2 – Write and distribute newsletters and other informational materials

***Parks Involved*:** All NETN parks.

- **FY 2005 Accomplishments:** Produced a network newsletter to describe the network and the I&M program to a broad audience, and began drafting site bulletins for NETN parks that describe the draft monitoring protocols.
- **FY 2006 Scheduled Activities and Products:** (1) Continue producing the annual NETN newsletter, 2) finish site bulletins detailing draft monitoring protocols, (3) begin developing annual informational reports that will appeal to a wide audience.

Task 7.3 – Develop and present informational programs about NETN programs to park staff, volunteers, and the public

***Parks Involved*:** All NETN parks.

- **FY 2005 Accomplishments:** Began developing informational programs that will be presented to park staff during winter and spring 2006.
- **FY 2006 Scheduled Activities and Products:** Complete and present park informational programs in winter and spring 2006, and begin planning FY 2007 programs.

Task 7.4 – Pilot the integration of Vital Signs monitoring into local school science curricula

***Park Involved*:** MABI.

- **FY 2005 Accomplishments:** Co-authored and was awarded a civic engagement grant to integrate vital signs monitoring into local school science curricula.
- **FY 2006 Scheduled Activities and Products:** Develop a lesson plan for middle- and high-school students to learn about forest ecology and implement a component of the forest monitoring program developed by NETN. A terrestrial salamander monitoring program will be piloted to determine if local schools can integrate the monitoring into their science programs.

C. Water Quality Monitoring

***Objective 8 –** Develop water quality monitoring in the Network parks.*

Task 8.1 – Draft Freshwater Resource Monitoring Protocol

***Parks Involved*:** ACAD, BOHA, MABI, MIMA, MORR, ROVA, SAGA, SAIR, SARA, WEFA

- **FY 2005 Accomplishments**: (1) Continued an agreement with USGS to begin developing the Freshwater (lakes and streams) Monitoring Protocol for NETN parks; (2) reviewed and analyzed the Acadia lake monitoring data to integrate the ongoing park program with NETN; (3) conducted cost/benefit analysis to prioritize measures that will be included in the protocol; (4) developed sampling frame, defined sample units, and scales of inference; (5) drafted all SOP's and the protocol narrative; (6) reviewed state programs to ensure that NETN water quality monitoring is consistent with states.
- **FY 2006 Scheduled Activities and Products**: (1) Complete the draft Freshwater Resources Monitoring Protocol (15 November 2005) and have it reviewed; (2) pilot the implementation of the protocol during the field season, including developing field crew training materials and training a crew, (3) use pilot data to finalize sample size, costs, and submit final protocol 15 September 2006.

III. Staffing

Inventory and Monitoring Staff

Beth Johnson, Northeast Regional I&M Coordinator
Brian Mitchell, Incoming Northeast Temperate Network I&M Coordinator
Fred Dieffenbach, Northeast Temperate Network Data Manager
Theresa Moore, Northeast Temperate Network Science Communications Specialist
Greg Shriver, Outgoing Northeast Temperate Network I&M Coordinator

Key Cooperators

Don Faber-Langendoen, State University of New York / NatureServe
James Gibbs, State University of New York, College of Environmental Science and Forestry
Geri Tierney, State University of New York, College of Environmental Science and Forestry
Pam Lombard, USGS
Leslie Sneddon, NatureServe
Y.Q. Wang, University of Rhode Island
Charles Schwiek, University of Massachusetts

Board of Directors

Rolf Diamant, Superintendent Marsh-Billings-Rockefeller National Historical Park
Sheridan Steele, Superintendent Acadia National Park
Pamela Underhill, Superintendent Appalachian National Scenic Trail
Bruce Jacobson, Superintendent Boston Harbor Islands National Park Area
Nancy Nelson, Superintendent Minute Man National Historical Park
Randy Turner, Superintendent Morristown National Historical Park
Sarah Olson, Superintendent Roosevelt-Vanderbilt National Historic Site
Patricia Trap, Superintendent Saugus Iron Works National Historic Site
Frank Dean, Superintendent Saratoga National Historical Park
Linda Cook, Superintendent Weir Farm National Historic Site
BJ Dunn, Superintendent Saint Gaudens National Historic Site
Mary Foley, Chief Scientist Boston Support Office
Elizabeth Johnson, Regional I&M Coordinator University of Rhode Island
Brian Mitchell, Northeast Temperate Network Coordinator

Technical Steering Committee Members

Brian Underwood, USGS, SUNY Syracuse, Wildlife Biologist
Sam Droege, USGS Patuxent, Monitoring Program Developer
David Manski, Acadia National Park, Chief Natural Resource Manager
David Hayes, Roosevelt-Vanderbilt NHS, Natural Resource Specialist
Christopher Eagar, USFS, Forest Ecosystem Ecologist
Wayne Millington, NPS, IPM
Tonnie Maniero, NPS, Air Quality
Mary Foley, NPS, Regional Chief Scientist
Charles Roman, NPS, North Atlantic Coast CESU Coordinator and Wetland Ecologist
Beth Johnson, NPS, Regional I&M Coordinator
Fred Dieffenbach, NPS, NETN Data Manager
Brian Mitchell, NPS, NETN Coordinator
Greg Shriver, University of Delaware

IV. Reports, Publications and Presentations

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Agius, B. December 2003. Forging Changes in an American Landscape: Invasive Plant Species at the Saugus Iron Works National Historic Site. Technical Report NPS/NER/NRTR—2005/010. National Park Service. Woodstock, VT.

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V. Status of Park Vital Signs Monitoring

Northeast Temperate Network 2004	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics
Planning and Design							
# parks monitoring w/ NETN funding	11	11	11	11	11	11	11
# parks monitoring w/ other funding	2	7	7	0	10	4	0
Protocols Implemented							
# parks monitoring w/ NETN funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	2	7	7	0	10	4	0
Analysis/Synthesis Available							
# parks monitoring w/ NETN funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	2	7	7	0	10	4	0

VI. USGS Protocol Development and Monitoring-Related Research Needs

1. *Early detection of invasive plants and animals*. The I&M program identified early detection as protocol development priority for multiple networks. NETN also has a need for early detection monitoring protocols.

2. *Visitor Impacts*: All NETN parks identified visitor impacts as an important vital sign and a standard, cost effective protocol for monitoring this potential stressor would likely aid many networks.

3. *Data acquisition, synthesis, and summary*. Climate and air quality vital signs for NETN will be summarized and interpreted for parks using existing monitoring programs and datasets. It would be helpful to have an automated, web-based system that would retrieve the necessary data for each network park and provide the basic data summaries given user defined time frames.

4. *Phenologic changes along the Appalachian Trail*. As part of the "State of the Trail" report being edited by NETN, assistance is needed to acquire and analyze phenologic data that reviews species range shifts, changes in growing season, alpine recession, and other metrics of climate change associated with the Appalachian Trail.

5. *Rocky intertidal protocol development*. Acadia and Boston Harbor Islands have significant rocky intertidal resources that will be included for monitoring in the vital signs program. Assistance is needed to develop all the necessary components of an I&M

protocol for the rocky intertidal systems at these 2 parks. This protocol could be adopted by the Gulf of Maine Council Habitat Monitoring Committee and be implemented throughout the Gulf of Maine.

VII. Budget Narrative and Budget Printouts

Budget Narrative: In FY 2005, the network received, $632,000 Vital Signs Monitoring funds, $58,610 water quality funds, $80,100 biological inventory funds for the AT, and $92,100 vegetation mapping funds to continue the network's inventory and monitoring program. Monitoring funds were allocated to salaries for the network coordinator, data manager, and a science communication specialist. The network maintained and established cooperative agreements to advance the development of ecological monitoring and complete inventories in network parks, worked with cooperators to develop 3 monitoring protocols (forest, breeding birds, and freshwater quality), and selected the vital signs for the Appalachian Trail. The network established a cooperative agreement to acquire natural heritage data associated with the AT and to scope the alternatives for how to streamline data sharing in the future. A mammal inventory on the AT in Maine was initiated to compliment the ongoing mammal inventory in CT-PA.

In FY 2005, the NETN received $58,610 from the Water Resources Division to continue the design of the water quality monitoring program. The funds were used in cooperation with USGS through an interagency agreement. The USGS cooperators worked closely with the network as a component of the core science team to develop the freshwater monitoring protocols for the NETN Phase 3 report.

Budget Summary

FY05 Admin Report Network: 14 Northeast Temperate

Category: 1_Income

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Veg. Mapping	$92,100.00	Veg. Mapping Program		
1/4 Regional Coordinator 2144-NII account	$30,000.00	I&M - VS Monitoring $$		
Monitoring Funds	$632,000.00	I&M - VS Monitoring $$		
Water Quality Funds	$58,610.00	WRD - WQ Monitoring		
Appalachian Trail Inventory Funds	$80,100.00	I&M - Biol. Inventory $$		
Subtotal	*$892,810.00*			

Category: 2_Personnel

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Data Manager - Gawley	$16,633.85	I&M - VS Monitoring $$	NPS	Salary & Benefits
Regional Coordinator	$30,000.00	I&M - VS Monitoring $$	NPS	1/4 RC 2144 NII Account
Network Coordinator	$74,855.35	I&M - VS Monitoring $$	NPS	Salary & Benefits
Data Manager	$79,619.39	I&M - VS Monitoring $$	NPS	Salary & Benefits
Science Communication Specialist	$52,597.52	I&M - VS Monitoring $$	NPS	Salary & Benefits
Network Coordinator Salary	$1,950.33	I&M - Biol. Inventory $$	NPS	Salary & Benefits
Subtotal	*$255,656.44*			

Category: 3_Coop. Agreements

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
UMass IT Development	$18,808.00	I&M - VS Monitoring $$	University-CESU	Web Page Development
NatureServe	$32,314.00	I&M - VS Monitoring $$	Other non-Federal	Forest Monitoring/Scorecard
State University of New York	$83,729.00	I&M - VS Monitoring $$	University-CESU	Forest Monitoring Protocol

USGS Maine Water Resources	$63,124.46	I&M - VS Monitoring $$	USGS	Freshwater Monitoring Protocol
USGS Maine Water Resources	$58,610.00	WRD - WQ Monitoring	USGS	Freshwater Monitoring Protocol
NCState	$16,996.00	I&M - VS Monitoring $$	University-CESU	veg. mapping/data mgt.
Mammal Inventory	$29,900.00	I&M - VS Monitoring $$	USGS	USGS/O'Connell
Herp/Mammal Inv. BOHA	$24,205.00	I&M - VS Monitoring $$	University-CESU	Paton URI
APPA Inventories	$77,251.14	I&M - Biol. Inventory $$	Other non-Federal	NatureServe: data management and Maine mammal inventory
Vermont Ins. Natural Science	$24,780.00	I&M - VS Monitoring $$	Other non-Federal	Avian Monitoring Protocol
WCS Herp Reports/Certification	$8,000.00	I&M - VS Monitoring $$	Other non-Federal	Herp inventory/Final Reports
NatureBIB Funding	$14,409.00	I&M - VS Monitoring $$	University-CESU	Penn State/Tiffney
Report Formatting	$1,000.00	Veg. Mapping Program	University-CESU	Emily Hill
NatureServe Veg. Mapping	$4,851.00	I&M - VS Monitoring $$	Other non-Federal	Scoping
Mammal Inventory	$822.00	I&M - VS Monitoring $$	University-CESU	URI/Telancy
NatureServe - Accuracy Assessment	$50,075.00	Veg. Mapping Program	Other non-Federal	MIMA, SAGA, MABI Acc. Assessment
NatureServe - APPA veg. map	$40,104.00	Veg. Mapping Program	Other non-Federal	APPA veg. map scoping
Subtotal	*$548,978.60*			

Category: 5_Operations/Equipme

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Publications	$2,747.00	I&M - VS Monitoring $$	NPS	Cost to Produce Regional Series Technical and Network Documents
Equipment	$30,794.13	I&M - VS Monitoring $$	NPS	
MABI Operations	$20,000.15	I&M - VS Monitoring $$	NPS	
Subtotal	*$53,541.28*			

Category: 6_Travel

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Travel	$19,841.68	I&M - VS Monitoring $$	NPS	
Subtotal	*$19,841.68*			

Category: 7_Other

Description		*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
NERO Assessment		$921.00	Veg. Mapping Program	NPS	
NERO Assesment		$7,222.47	I&M - VS Monitoring $$	NPS	
Incoming Coordinator PCS		$5,750.00	I&M - VS Monitoring $$	NPS	Brian Mitchell
NERO Assesment		$898.53	I&M - Biol. Inventory $$	NPS	
	Subtotal	*$14,792.00*			

Budget Analysis

Analysis of Expenses by Where $ Went

Funding Source	Total $$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - Biol. Inventory $$	$80,100	$2,849					$77,251
I&M - VS Monitoring $$	$662,000	$340,062	$93,024		$158,969		$69,945
Veg. Mapping Program	$92,100	$921			$1,000		$90,179
WRD - WQ Monitoring	$58,610		$58,610				
Totals	$892,810	$343,831	$151,634		$159,969		$237,375

Analysis of Expenses by Category

Funding Source	Total $$	Personnel	Coop Agree.	Contracts	Operations/Equip.	Travel	Other
I&M - Biol. Inventory $$	$80,100	$1,950	$77,251				$899
I&M - VS Monitoring $$	$662,000	$253,706	$321,938		$53,541	$19,842	$12,972
Veg. Mapping Program	$92,100		$91,179				$921
WRD - WQ Monitoring	$58,610		$58,610				
Totals	$892,810	$255,656	$548,979		$53,541	$19,842	$14,792

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	$255,656	28.69%
3_Coop. Agreements	$548,979	61.60%
5_Operations/Equipment	$53,541	6.01%
6_Travel	$19,842	2.23%
7_Other	$14,792	1.66%
	$892,810	

Budget Summary

FY06 Work Plan Network: 14 Northeast Temperate

Category: 1_Income

Description	$ Amount	$$ Source	Where $ Went	Comments
1/4 Regional Coordinator 2144-NII account	$30,000.00	I&M - VS Monitoring $$		
Water Quality Funds	$60,000.00	WRD - WQ Monitoring		
Monitoring Funds	$782,000.00	I&M - VS Monitoring $$		
Subtotal	*$872,000.00*			

Category: 2_Personnel

Description	$ Amount	$$ Source	Where $ Went	Comments
Data Manager	$78,955.68	I&M - VS Monitoring $$	NPS	Salary & Benefits
Science Communication Specialist	$59,728.00	I&M - VS Monitoring $$	NPS	Salary & Benefits
Hydrological Technician, GS-7	$18,782.00	I&M - VS Monitoring $$	NPS	Salary & Benefits, 6 month season
ACAD GS-5 Seasonal	$7,582.00	I&M - VS Monitoring $$	NPS	Salary & Benefits, 6 pp
Network Coordinator (outgoing)	$15,688.47	I&M - VS Monitoring $$	NPS	Salary & Benefits
ACAD GS-7	$10,586.00	WRD - WQ Monitoring	NPS	Salary & Benefits, 6 pp
ACAD GS-11 (Bill Gawley)	$16,173.00	WRD - WQ Monitoring	NPS	Salary & Benefits, 6 pp
Network Coordinator (incoming)	$65,597.54	I&M - VS Monitoring $$	NPS	Salary & Benefits
1/4 Regional Coordinator Salary	$30,000.00	I&M - VS Monitoring $$	NPS	Salary & Benefits, 3 months
AT Coordinator	$35,000.00	I&M - VS Monitoring $$	NPS	Salary & Benefits
Subtotal	*$338,092.69*			

Category: 3_Coop. Agreements

Description	$ Amount	$$ Source	Where $ Went	Comments
USGS - Patuxent	$90,000.00	I&M - VS Monitoring $$	USGS	Wetland protocol

USGS Maine Water Resources	$33,241.00	WRD - WQ Monitoring	USGS	Freshwater monitoring - ACAD gages
State University of New York	$100,000.00	I&M - VS Monitoring $$	University-CESU	Forest Condition protocol evaluation
USGS Maine Water Resources	$50,000.00	I&M - VS Monitoring $$	USGS	Freshwater protocol (includes training)
Civic Engagement	$2,000.00	I&M - VS Monitoring $$	NPS	MABI Partnership
AT Projects TBD	$35,000.00	I&M - VS Monitoring $$	NPS	
VINS - Forest Birds Protocol	$10,000.00	I&M - VS Monitoring $$	Other non-Federal	Protocol evaluation and implementation
Cooperator TBD - Coastal Birds	$15,000.00	I&M - VS Monitoring $$	Other non-Federal	Coastal Birds protocol development
NatureServe	$10,000.00	I&M - VS Monitoring $$	Other non-Federal	Scorecard reporting
Subtotal	*$345,241.00*			

Category: 4_Contracts

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Water Analysis (Lab)	$10,392.00	I&M - VS Monitoring $$	Other Federal	Water quality lab tests
Subtotal	*$10,392.00*			

Category: 5_Operations/Equipmen

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
APPA Operations	$2,500.00	I&M - VS Monitoring $$	NPS	
APPA Coordinator move	$30,000.00	I&M - VS Monitoring $$	NPS	FY 06 cost for APPA Coordinator move
Coordinator Move	$3,662.81	I&M - VS Monitoring $$	NPS	FY 06 cost for NETN Coordinator move
MABI Operations	$22,000.00	I&M - VS Monitoring $$	NPS	
Publications	$10,000.00	I&M - VS Monitoring $$	NPS	Cost to Produce Regional Series Technical Documents and Network

					Documents
Equipment		$51,571.50	I&M - VS Monitoring $$	NPS	
	Subtotal	*$119,734.31*			

Category: 6_Travel

Description		*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Travel		$8,700.00	I&M - VS Monitoring $$	NPS	Hydro Tech per diem and lodging
Travel		$33,000.00	I&M - VS Monitoring $$	NPS	Core staff travel and training
	Subtotal	*$41,700.00*			

Category: 7_Other

Description		*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Regional Assessment - 2%		$16,840.00	I&M - VS Monitoring $$	NPS	
	Subtotal	*$16,840.00*			

Budget Analysis

Analysis of Expenses by Where $ Went

Funding Source	Total $$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - VS Monitoring $$	$812,000	$526,608	$140,000	$10,392	$100,000		$35,000
WRD - WQ Monitoring	$60,000	$26,759	$33,241				
Totals	$872,000	$553,367	$173,241	$10,392	$100,000		$35,000

Analysis of Expenses by Category

Funding Source	Total $$	Personnel:	Coop Agree.	Contracts	Operations/Equip.	Travel	Other
I&M - VS Monitoring $$	$812,000	$311,334	$312,000	$10,392	$119,734	$41,700	$16,840
WRD - WQ Monitoring	$60,000	$26,759	$33,241				
Totals	$872,000	$338,093	$345,241	$10,392	$119,734	$41,700	$16,840

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	$338,093	38.77%
3_Coop. Agreements	$345,241	39.59%
4_Contracts	$10,392	1.19%
5_Operations/Equipment	$119,734	13.73%
6_Travel	$41,700	4.78%
7_Other	$16,840	1.93%
	$872,000	